IN THE

Supreme Court of the United States

OCTOBER TERM, 1974

NO. 74-1033

C. MARSHALL DANN, COMMISSIONER OF PATENTS AND TRADEMARKS, *Petitioner*

v.

THOMAS R. JOHNSTON, *Respondent*

BRIEF FOR RESPONDENT IN OPPOSITION

ON PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF CUSTOMS AND PATENT APPEALS.

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OBJECTIONS TO JURISDICTION

This Court, like the Court of Customs and Patent Appeals below, is without jurisdiction to review the "new use of an old machine" rejection (Pet. 15)[1] of respondent's invention that was originally made by the Patent Examiner and thereafter was reversed by the Patent Office Board of Appeals below (Pet. 28A) as contrary to the technological facts of computers. A revival of this rejection is the foundation for the petition and its proposed questions. The review called for by the petition would be an appeal by the Commissioner of Patents from his own Board's decision, which this Court in *Brenner v. Manson*, 383 U.S. 519, 523, n. 6 (1966), stated would be in violation of the Patent Code, 35 U.S.C. 141 (granting only to the applicant the right of appeal from a decision of the Board of Appeals).

The Board of Appeals held in favor of respondent on the "new use of an old machine" issue; consequently, petitioner could not and did not appeal that finding to the Court of Customs and Patent Appeals. That new-use/old-machine issue was not, and could not have been, within the reasons of appeal (R. 328);[2] it was not argued before the Court of Customs and Patent Appeals and was beyond the scope of their decision, because such appeal is statutorily limited to the points set forth by the applicant in the reasons of appeal 35 U.S.C. 142, 144. This Court's review of the decision of the Court of Customs and Patent Appeals is derived from and limited by the latter's jurisdiction. Judicial review of decisions of the Patent Office is granted only to the applicant and is confined to the reasons of appeal.

Also flawed jurisdictionally are the technological fact issues that underlie the computer-program rulings requested by the petition. These issues on the technological nature of computer programs — that every program is (i) but an obvious or "routine" implementation of (ii) a "purpose or idea" (Pet. 10), and (iii) not part of an "actual ma-

1. "Pet." refers to the petition herein.

2. "R." refers to the record below, a copy of which has been forwarded up to this Court.

chine" (Pet. 13) — are not supported by any evidence produced before the Patent Office, and could not be, and were not, raised before the court below, 35 U.S.C. 144, and therefore are not proper issues for review in this Court.

STATUTORY PROVISIONS INVOLVED

35 U.S.C. 141 provides:

> An applicant dissatisfied with the decision of the Board of Appeals may appeal to the United States Court of Customs and Patent Appeals, ...

35 U.S.C. 142 provides:

> When an appeal is taken to the United States Court of Customs and Patent Appeals, the appellant shall give notice thereof to the Commissioner, and shall file in the Patent Office his reasons of appeal, specifically set forth in writing, ...

35 U.S.C. 144 provides:

> The United States Court of Customs and Patent Appeals, on petition, shall hear and determine such appeal on the evidence produced before the Patent Office, and the decision shall be confined to the points set forth in the reasons of appeal. . . .

QUESTION PRESENTED

Under the provisions of the Patent Code relating to appeals, the only question before this Court is:

Whether an automatic record-keeping machine for all types of small-volume users (*e.g.*, merchants, professionals farmers) which enables each to use an individualistic record-keeping format and accounting procedure, and which employs, *inter alia*, a general control for directing the processing operations that are common to most users, which control interacts with and is directed by a master control located in the data files for directing the operations that vary with each user, is unobvious under 35 U.S.C. 103.

STATEMENT OF THE CASE

Respondent's invention as described in his patent application is a "machine system for automatic record-keeping of bank checks and deposits," and is concerned with the use of electronic digital computers for the ordinary financial record-keeping required by small-volume users of all types.

The Machine Problem to Be Solved

The Government and large companies employ electronic computers for processing masses of financial data by performing large numbers of elementary arithmetic operations. Generally, the accounting procedures and ledger formats of such a large-scale user are made to be uniform so that a single special-purpose computer (formed by programming a general-purpose digital computer) can handle all of the data processing — a requisite of efficient use of the large-scale computer facilities. Wide variations in ledger format and in the bookkeeping and accounting procedures used in the ledger summaries were the barriers to efficient use of such computers by low-volume users (*e.g.*, merchants, professionals, farmers).

Respondent recognized that it would be next to impossible to force such small-volume users into a uniform mold of record-keeping so that any single, existing special-purpose computer could be applied to all of them. On the other hand, any single, prior art computer that could handle the wide variations in format among small-volume users would be impractical whether built entirely of circuitry or constructed by programming a general-purpose computer. In addition, any such prior art machine would have the drawback of being unable easily to accommodate users' needs to make changes or corrections in their formats or procedures; nor would it be able to add new users without difficulty. Respondent also recognized that the conventional machine-readable bank checks and deposit slips utilized by merchants, professionals and farmers in their regular business and banking transactions would contain

all the necessary information to perform this record-keeping if a category code were added to them to identify each item within the different classes of a ledger.

The Machine Solution

Respondent devised a single special-purpose computer to do the record-keeping for a variety of users where the prior art would require a different special-purpose computer for each user. This result is achieved with a unique combination of controls, as the court below found (Pet. 5A):

> The control system . . . [comprises] a general control which is applicable to the processing operations that are common to most customers and a master control for the operations that vary on an individual basis with each customer. The general control, as allegedly reduced to practice, is in the form of a software program and the master control is a series of sub-files, one for each customer, which are in the form of a sequence of records containing suitable control mechanisms and the customer's financial data.

The general controls include those controls that direct various totalizing operations in accordance with the master controls established individually by the user himself and set up in each user's master sub-files, which also contain the user's data. With the mechanisms of this construction, any record-keeping format can be handled, and all of the control variations that exist among users are set up in the master files and can be readily changed or added to as though they were data. The single set of general controls (which unlike data cannot be readily modified) interacts with, and is effectively a slave to, all of the master controls for each customer. The slave or general controls direct the performance of all of the record-keeping in the customer's own format and bookkeeping or accounting procedure under the direction of the master controls. Thus, each user is supplied with his own individualized printed ledger report. Changes in controls for modifying the format or pro-

cedure for any small user can be achieved about as easily as an error in an amount can be corrected, and new users can be similarly added to the system without changes or additions to the general controls. Thus, once designed and constructed, the general controls do not have to be reconstructed to accommodate customary changes in user requirements.

Respondent's special-purpose computer is also disclosed (R. 93, 94) for construction entirely by equivalent wired computer circuitry known to those skilled in the art, which version is a more costly one given the present state of the computer art and therefore not preferred.

The patent claims approved by the Court of Customs and Patent Appeals decision are directed to respondent's machine construction employing the aforementioned two-part control mechanism; and all the claims specify the different locations of the two controls: one in the master files so that they can be easily changed (*e.g.*, if the user's bookkeeping format changes) and the other as the general controls that remain unchanged for all users. The claims *per se* do not raise any issue of computer programs; they do not call for the use of a computer program in the construction of respondent's special-purpose computer, and they apply also to the wired computer-circuitry version.

Only machine claims were in the patent application as originally filed. These machine claims were rejected by the examiner as improper in form, and process claims were required by the examiner instead by reason of the use of a computer program, which he held was a "new use of an old machine." This new-use/old-machine rejection was reversed by the Board of Appeals, since it was predicated on a false understanding of the technological facts of computers and computer programs, as the Board held (Pet. 28A):

> . . . an unprogrammed, or a differently programmed, general purpose computer is [not] the same machine as the one that would result from appel-

lant's programming of the same or of a similar computer.

That is, a program inserted in a general-purpose computer creates a new machine that incorporates, as one part, the machine of the general-purpose computer and as another part, the computer program, which interconnects the parts of the general-purpose computer into a certain configuration with a particular combination of controls determined by the program. In short, "the program restructures the computer," Flores, "Computer Software," *infra*.

Thereafter, on appeal to the Court of Customs and Patent Appeals, the process claims were dropped and original machine claims were retained, for respondent did not believe process claims defined the invention, which has as its nub the control mechanism formed as a combination of two specific parts and a specific location and interrelation of those parts. This control mechanism, respondent has always asserted, is part of a machine rather than a process.

The court below also concluded that none of the prior art was concerned with the machine problem and none disclosed the machine solution embodied in respondent's invention (Pet. 15A, 16A); for with respondent's single machine, the record-keeping for all of the multitude and variety of users can be performed in a practical way, while with the prior art a *different* machine would be required for each user having a different ledger format or a different bookkeeping procedure.

ARGUMENT

All of the issues underlying the questions formulated in the petition are issues of the technological facts of computers and computer programs, issues of fact on which there is no conflict between the two tribunals below, or issues which were not raised below. In both cases there is no evidence developed in the record on which the Court can reach the requested decision. Under these circumstances, this Court has ruled, *Graver Tank & Mfg. Co. v. Linde Air Products*, 336 U.S. 271, 275 (1949):

> A court of law, such as this Court is, rather than a court for correction of errors in fact finding, cannot undertake to review concurrent findings of fact by two courts below in the absence of a very obvious and exceptional showing of error. [citations omitted]

The petition does not support the allegations of error by any evidence identified in the record, or otherwise tendered, so that this case is not an appropriate one for the Court to exercise jurisdiction under 28 U.S.C. 1256.

There are no important questions of law that are unresolved, for the legal principles applied by the court below are well established: the doctrine, last enunciated by the Court in *Gottschalk v. Benson*, 409 U.S. 63 (1972), that "ideas" are not patentable, and the fundamental patent rule that: "A machine is not a principle or an idea," crisply set down by the Court in *Burr v. Duryee*, 68 U.S. 531, 570 (1864), following the Court's similar ruling in *O'Reilly v. Morse*, 15 How. (56 U.S.) 62 (1853); see also *Mackay Radio v. Radio Corporation of America*, 306 U.S. 86 (1939); *The Telephone Cases*, 126 U.S. 1 (1888). The *Burr* and *Morse* rule that a patent to a machine does not cover a process or an "idea," which was followed by the court below, is consistent with *Benson*, which was concerned with a process, and a mathematical process at that. Applying these rules and recognizing that computer programs restructure computers into different machines, the Court in *Benson* clearly

stated, in response to petitioner's request to hold all computer programs unpatentable, "We do not so hold," (at 71).

The technological issues of fact that the petition asks the Court to deal with are: every computer program is (i) a "routine" or obvious implementation (Pet. 10) of (ii) an "idea or purpose" (Pet. 10), and (iii) is not part of any "actual machine" (Pet. 13), from which petitioner argues it is only a "new use of an old machine" (Pet. 15). These factual issues are set up by the petition, in a procrustean attempt to cut and stretch all machines constructed by programs (as well as the machine of this case) into a *Benson* fact situation, notwithstanding that there is no evidence in the record that all computer programs are (i) "routine," or obvious, nor evidence that programs are only directed to (ii) "ideas"; and notwithstanding that the issue that a computer program is (iii) not part of an "actual machine" is contradicted by long-standing decisions of both tribunals below, see Section II, *infra*, reiterated by the Board in this case. The Board (as quoted above) held that the controls produced by the computer program are a part of the *different* machine produced by that program;[3] and the Board also reversed the examiner's holding that a computer program is a new "use of a known machine" (Pet. 28A).

The petition's factual issues fly in the face of all technological, as well as legal, authority (see Section II, *infra*) and are palpably unfounded. Computer programs exist to convert a general-purpose computer to, *inter alia*, a musical synthesizer (see Appendix herein),[4] a talking computer, or a document reading computer, all of which are plainly

3. A similar statement was made by Justice White at the oral argument of *Benson*, Transcript of Oral Argument at 17.

4. One such musical synthesizer receives punch card records of the musical notes to make a recording or play the corresponding music. In the musical synthesizer shown in the Appendix the computer program provides additional structure for the illustrated general-purpose computer so that the input to the computer is in the form of printed music notation such as would appear in sheet music, from which the programmed machine generates the output for reproducing the corresponding music. A composer can write his music and have it played back immediately.

machines and not "ideas," and certainly each is not a "routine" or obvious development but rather "synergistic." The program in each of these examples establishes the interconnections and vital control mechanisms that determine the structural form of the machine. These examples illustrate that not only have unobvious machines built with computer programs been invented in the past, but that there remain many unsolved machine problems on the horizon, and their solution may be provided by a programmed computer.

Such machines, formed as a combination of known devices (including an existing general-purpose computer), are patentable as machines notwithstanding that one or more of the devices (including the existing computer) are themselves patented, *Cantrell v. Wallick*, 117 U.S. 689, 694 (1886).

The court below concluded from the technological facts of respondent's invention that the claimed machine *is not* merely a "routine," or obvious implementation and *is* a machine *not* an "idea." The review here requested, not only of the claimed machine but of all machines produced with computer programs, would not be appropriate, for this Court would not have the basis for reaching the conclusion that all computer programs are unpatentable. No general rule negating patentability of all programmed computers can be established from the machine example in this case (any more than it could be in *Benson*, from the singular example of that mathematical process). On the other hand, it is manifest from the above examples and many others that not all computer programs suffer from the foregoing alleged factual disabilities. Therefore, even under petitioner's procrustean argument, the Government does not have any rational basis to arrive at a universal rule that machines built by programmed computers are not patentable. That universal rule was rejected in *Benson* ("We do not so hold," at p. 71); for the petitioner's arguments would "certainly . . . reduce programs to a nothing." (Tr. *Benson*, 18).[5] For the same reasons, this peti-

5. "Tr. *Benson*" refers to the transcript of oral argument in that case.

tion's request for such a sweeping rule would have to be rejected here.

Lacking any evidence to support a general rule of nonpatentability of all computer programs, and in light of strong evidence to the contrary, it is inappropriate to use this case as a vehicle for the promulgation of such a general rule. The petition offers no other reason to justify review of the Court of Customs and Patent Appeals' application of well-developed law to the particular facts of respondent's invention which resulted in finding it patentable.

In the manner of an afterthought the petition also asks the Court to review, along with the other questions, the holding of the court below that respondent's machine is unobvious under 35 U.S.C. 103 in view of the prior art, while conceding that the unobviousness question is not an appropriate matter for the Court's review (Pet. 17, n. 10). But respondent's combination of control mechanisms is unobvious, because it is "synergistic," that is of "an effect greater than the sum of the several effects taken separately." See *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57, 61 (1969). The invention is a single practical special-purpose computer, while the prior art's impractical alternative would require many special-purpose computers, each inflexibly set to a user's particular format and procedure.

Petitioner cannot successfully contest the patentability of the claimed machine on its merits; so petitioner seeks to negative patentability by the type of computer architecture (namely, a computer program) which was used to construct the preferred embodiment. This violates the clear proscription of 35 U.S.C. 103 that: "Patentability shall not be negatived by the manner in which the invention was made." The review requested manifestly seeks to accomplish precisely that which is proscribed.

The dissents in the Court of Customs and Patent Appeals did not disagree on these factual questions of computer technology. Judge Rich's opinion in this case, though termed a dissent, is more of a statement of disagreement with this Court's decision in *Benson*; an expression of

support for the C.C.P.A's decision by reaffirming his own opinion in *Benson*, and his formulation of a position to compel the Patent Office to seek *certiorari* in this *Johnston* case for a reargument of *Benson*, as he explained in a recent article:[6]

> I do not see how the Patent Office can avoid at least trying to get certiorari granted in *Johnston*, as I implied in my dissenting opinion, in which, by the way, I do not abandon my personal beliefs about what § 101 means, as expressed in the CCPA *Benson* opinion, ...

While Judge Rich is highly complimentary in suggesting this *Johnston* case as a vehicle before this Court to reargue *Benson*, *Johnston* has substantially different issues from those of *Benson*, and cannot, any more than *Benson*, afford a record for a resolution of the technological questions so as to reach the rule requested by the petition that all computer programs are unpatentable.[7]

The decision below can be extremely important in encouraging competition in the computer-program (software) part of the computer industry (the most important part, since programs are the *sine qua non* of computers), and Judge Rich's opinion contains a strong reminder of the competitive implications.[8] This same view is expressed by

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6. Giles Sutherland Rich, "Change" 2 *APLA Quarterly Journal* 214, at 226 (American Patent Law Association, Fall 1974).

7. Chief Judge Markey's opinion below dissents on the question of unobviousness, but does not express any change from his consistent support of the long line of the Court of Customs and Patent Appeals decisions on the technological findings that underlie the patentability of computing machines built by means of a programmed general-purpose computer (quoted *infra*). See *In re Comstock*, 481 F.2d 905, 909 (1973); *In re Knoulton*, 481 F.2d 1359, 1368 (1973).

8. J. Rich's opinion states: "I find it . . . significant to contemplate the identities of the troops lined up for battle in *Benson* and observe which side obtained the victory. On the one side was the Government, against patenting programs or software, supported by the collective forces of major hardware (i.e., computer) manufacturers and their representative associations who, for

the computer industry itself in a report by *Datamation*, a leading monthly computer trade journal, March, 1975, pp. 18, 128 that stated the *Johnston* decision, which deals with a "machine system" (unlike *Benson* which dealt with a "mathematical process") will "spur the growth of the independent software business." Certainly, respondent and other small software businesses are entitled to the same patent protection for its machine inventions as that provided by "IBM's patents" (Pet. 15) granted for IBM's machines.

The Court of Customs and Patent Appeals has been proceeding in the traditional fashion on a case-by-case basis to determine which of this technology would be patented and which would not. Case-by-case supervision by this Court as called for by the petition is inappropriate.

I. None of the objections found by the Court to a patent for the mathematical process in *Benson* apply in this case. Unlike *Benson*, at 64, the claims herein are limited to a "particular art and technology" (that of automatic record-keeping) and to a "particular apparatus and machinery" (that of the special-purpose computer constructed to have the specific two-part control mechanism). The claims herein (unlike *Benson*, at 67) are not directed to mathematics, nor to a process, mathematical or otherwise, but are limited to apparatus and to presently existing machinery, see Section II, *infra*. Moreover, there are no "ideas," neither mathematical nor any other abstract ideas, that underlie respondent's machine, and a patent to that machine would (unlike *Benson*, at 71-72) not preempt any "ideas" nor any mathematical formulas or algorithms, see Section III, *infra*. Respondent's apparatus performs only machine functions, for there is "not a

Note 8—*Continued*

economic reasons, did not want patents granted *on programs* for their machines. On the other side was Benson et al. and their assignee and assorted lawyers and legal groups who were in favor of patent protection for programs or software.

human being inside or outside" (Court of Customs and Patent Appeals below, Pet. 13A), and as this Court has held: "A machine is not a principle or an idea," nor can a patent limited to one form of machine cover the process it has in common with other forms of machines (*Burr*, at 570).

The petition (p. 13) quotes *Benson* out of context and argues that *Benson* (at 71-72) set the test that if a machine "has no substantial practical application except in connection with a digital computer" it is not patentable. Whatever that quote may mean in the context of *Benson*, certainly the Court did not conclude that effectively all digital computer technology is unpatentable, which is what the petition finds it must argue in order to contest the patentability of respondent's special-purpose computer. Nor did *Benson* (at p. 70) "preclude a patent for any program servicing a computer." The Court emphatically said: "We do not so hold," The Court in *Benson* rejected any such ruling that would "reduce programs to a nothing . . ." (Tr. *Benson*, at 18). As the Court's rejection of that ruling in *Benson* came after an exhaustive presentation of the technological issues, there would be no point to a reargument of *Benson* in this case.

II. The petition's argument that respondent's invention is a "new use of an old machine," not properly before this Court (see the Jurisdictional Statement), in essence asks this Court to decide the issue of technological fact of whether the programming of a general-purpose digital computer results in a special-purpose computer different from the general-purpose machine. The petition asks this Court to answer that question in the negative notwithstanding that 1) there is absolutely no evidence adduced on the issue in the record or in the petition, 2) all expert evidence is to the contrary, and 3) the issue was resolved in respondent's favor by both tribunals below and is in fact the subject of a well-considered line of cases in the Court of Customs and Patent Appeals.

One of the first clear findings on the technological nature of computer programs was published as a notice of the Commissioner of Patents in 1966, *"Guidelines to Examination of Programs,"* 829 O.G. 441, 442 by order of Edward J. Brenner, Commissioner of Patents, July 6, 1966, as follows:[9]

> A machine which has as a part thereof a program device to cause the entire combination to carry out machine functions is embraced within the patent statute the same as any other special purpose machine and the fact that portions of the complete machine take the form of a replaceable program device is of no moment.[10]

The Court of Customs and Patent Appeals found this same fact, *In re Prater*, 415 F.2d 1393, n. 29 (1969), as follows:

> . . . a general purpose computer may be regarded as but a storeroom of parts and/or electrical components. But once a program has been introduced, the general-purpose digital computer becomes a special-purpose digital computer (i.e., a specific electrical circuit. . . .

and again, *In re Bernhart* 417 F.2d 1395 (1969), as follows:

> [W]e say that if a machine is programmed in a certain new and unobvious way, it is physically different from the machine without that program; its memory elements are differently arranged. The fact that these physical changes are invisible to the eye should not tempt us to conclude that the machine has not been changed.

These findings have been followed since *Benson* in all of the most recent Court of Customs and Patent Appeals cases as follows (*Knowlton, supra*):

> . . . when appellant's program is fully loaded into the computer the stored pattern of signals transforms the unprogramed machine into a new structure, with all the necessary hardware elements being physically interrelated so as to enable them to perform their specified functions. [See also *Comstock, supra.*]

These findings of fact are based on and supported by the computer scientists themselves, who have day-to-day first-hand knowledge of the computer structure and its operation (Professor Ivan Flores, City University of New York, "Computer Software," *Science & Technology*, No. 89, May 1969, pp. 16, 17);

> . . . another feature distinguishing the computer from other mechanisms is its restructurability . . . The program directs the computer; changing the program restructures the computer.

A technical paper by the Director of the Computer Center of Purdue University[11] explains the interrelation-

9. This Guideline states unequivocally that respondent's machine is patentable, if unobvious. Commissioner Brenner subsequently explained in 1968 that these 1966 guidelines would not be followed, because the Patent Office sought "a strong deterrent to the filing of patent applications" apparently because it was concerned that it would be faced with an administrative inconvenience in examining such applications; *see* Brenner, *"The Future of Computer Programs in the U.S. Patent Office,"* at B-12.

10. The Guidelines further stated: "A programable machine, such as a general purpose computer, with its various parts not interconnected to perform any useful combined operation is merely a "warehouse" of unrelated parts. It may well be that the same machine, with a program device correctly related thereto, may yield a novel and useful machine combination due to the new interrelation of parts. In other words, the fact that such a prior art machine can have its parts interrelated by a program device in a new way to carry out machine functions of a specialized character may well result in a new patentable combination, unless there is a prior art teaching that would make the interrelations and results thereof obvious."

11. Prof. Saul Rosen, "Hardware Design Reflecting Software Requirements," 33 *Proc. Fall Joint Computer Conference*, 1968, Pt. II, pp. 1443, 1444.

ship and engineering equivalence of computer programs (software) and the computer circuitry (hardware) out of which the general-purpose computer is built, as follows: "much of the sequencing that is done by hardware is the same kind of thing that is done in [software] programming." The paper uses "the term *hardware programming* to indicate programming built into hardware, either through a microprogramming system or by other hardware sequencing methods" (emphasis ours). It uses another term, "extended machine" to characterize the "combined hardware and software system" that is produced when a general-purpose computer is operated under the control of a software program.

This paper[12] and others confirm the well established technological ". . . principle of the equivalence of programming and hardware. This principle begins to invade our consciousness when we recognize that a program for a general-purpose machine turns it into a special-purpose machine."[13]

Thus, the addition of a software program to control a general-purpose computer (thereby creating the "ex-

12. Ibid. at p. 1443: "Perhaps the most important part of the job of computer system design is to determine which functions are best handled by hardware, and which should be provided by software. All of the traditional engineering considerations come into play here. One must consider the added cost of additional hardware measured against possible gains in operating efficiency. One must consider the availability of manpower with the appropriate skills for design and for implementation. One must also consider intangible factors such as the inherent advantages of simplicity and the hidden costs of complexity.

"From the point of view of the computer user it makes no difference which features are incorporated into the hardware and which are programmed in software.

"It is the combined hardware-software system, the 'extended machine' that the user must rely on to provide the power and flexibility and convenience that have been promised with each new generation of computing equipment."

13. Prof. Saul Gorn, Final Report No. AD 59 URI, at p. 4, from Univ. of Penna. Moore School of Elec. Eng. to U.S. Army Signal Research & Development Labs, 1959.

tended machine") is just as much a machine addition to the general-purpose computer as is the additional hardware programming that may be used to enlarge or enhance the character of an existing hardware computer. In both cases, the addition of programming results in a machine system which is different from the machine without the additional programming.

III. The work stuff of a computer—the data, numbers, records—are abstract ideas; but the control mechanisms of the computer are concrete and determine the unique character of a special-purpose computer. This invention solves a machine problem and provides a concrete machine solution with a unique combination of interrelated control mechanisms which produces a concrete and novel special-purpose computer for processing the abstract ideas embodied in financial records. The claims herein cover the machine structured by a combination of control mechanisms and not the underlying process, which process of record-keeping is available to all to perform by any other machine construction, as this Court said (*Burr*, at p. 570):

> A machine is a concrete thing; consisting of parts, or of certain devices and combination of devices. The principle of a machine is properly defined to be . . . that peculiar combination of devices which distinguishes it from other machines. A machine is not a principle or an idea.

The court below was mindful of the doctrine that an abstract idea is not patentable subject matter in holding (without dissent on this issue) that this invention was not an abstract idea, nor would any monopoly be granted, directly or indirectly, for a business scheme (Pet. 14A):

> The appealed apparatus claims are not drawn to cover either a method of doing business or even a method of bookkeeping. Nor would banks "be restricted to the use of their data processing equipment only for their own bookkeeping and not . . . [be] allowed to freely expand into the business of keeping books for their

customers." Obviously, banks would be free to so expand their services and use any apparatus they may desire *except* the apparatus set forth in appellant's claims.

IV. The court below, in reversing the Board on the issue of unobviousness, found that the prior art computers considered by the Board (the system proposed by the Board and the system of the Dirks patent) are not concerned with the same problem as that of respondent's invention, namely, that of providing an automatic machine able to handle all of the different record-keeping of a large number of small-volume users in different formats and with different bookkeeping systems. Neither prior art system is even "suggestive of the subject matter of the . . . claims" (C.C.P.A. below, Pet. 16A), and neither suggests the specific combination of control mechanisms that is the nub of the claimed invention. To the contrary, the machine disclosed in the prior art Dirks patent and the system proposed by the Board are the type designed for a single large-volume user and would be impractical to deal with the machine problem of this invention.

The court below followed this Court's directive in *Graham v. John Deere Co.*, 383 U.S. 1, 6 (1966), and this Court's supervision of the Court of Customs and Patent Appeals' analysis of these technological details is not required in this case, and the petition so concedes (Pet. 17, n. 10).

CONCLUSION

For the above reasons, the petition should be denied.

Respectfully submitted,

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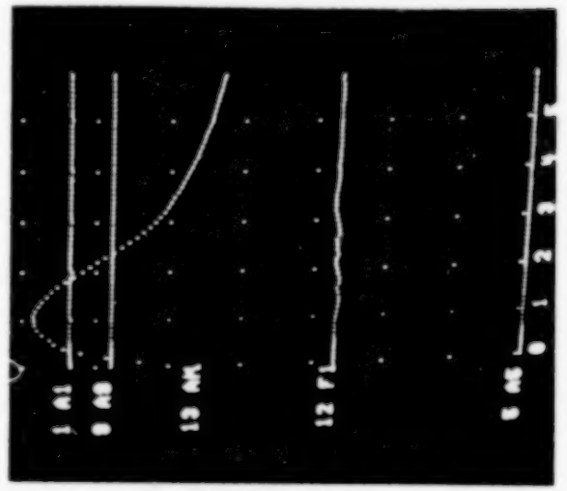
TECHNOLOGY REVIEW, MASSACHUSETTS INSTITUTE OF TECHNOLOGY VOL. 72, pp. 18, 19, MAY 1970.



M.I.T.'s Walter D. Bilofsky uses a PDP-9 computer adapted for sound synthesis and analysis. He is shown using a program, of his own design, for the construction of a musical score, which the computer plays using sounds designed with the help of a second, sound-specification, program. At right is the visual output of this program, which enables the composer to edit the characteristics of his chosen sound. (Photos: Don Estes)

La Machine Infernale

Music by Computers
Heinz Von Foerster, James W. Beauchamp, editors
New York, John Wiley & Sons, Inc.,
139 pp., $14.95

Reviewed by
Stephen W. Smoliar
Department of Mathematics, M.I.T.

This book is a collection of papers and sample recordings presented at the 1966 Fall Joint Computer Conference in a session entitled "Computers in Music" organized by Heinz Von Foerster.